

REMARKS

Claims 1-32 are pending in the present application. Reconsideration of the application is respectfully requested in view of the following responsive remarks. Specifically, in the office action of August 30, 2006, the Examiner rejected claims 1-32 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,557,989 (hereinafter "Hirosawa") in view of WO200037258 (hereinafter "Lavery").

Rejections Under 35 U.S.C. § 103

Before discussing the obviousness rejections herein, it is thought proper to briefly state what is required to sustain such a rejection. The issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness by showing the prior art reference, or references combined, teach or suggest all the claim limitations in the instant application. Further, the Examiner has to establish some motivation or suggestion to combine and/or modify the references, where the motivation must arise from the references themselves, or the knowledge generally available to one of ordinary skill in the art. The Applicant respectfully asserts the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness in any of the rejections.

The Examiner has rejected claims 1-32 under 35 U.S.C. 103(a) as being unpatentable over Hirosawa in view of Lavery. The Applicant respectfully asserts that the combination does not teach each and every element of the claimed invention. Specifically, the combination fails to teach the combination of a first reactive ink, and a second reactive ink or a fixer which react to form a solid precipitate, where the solid precipitate is redispersible or redissolvable in at least one of the first reactive ink, the second reactive ink, or the fixer. Furthermore, neither reference teaches a single orifice plate which prints two separate and reactive liquids, as is presently claimed. A brief discussion of each of Hirosawa and Lavery is thought relevant.

Hirosawa is directed primarily to a print head and ink jet printing apparatus. This case is primarily a mechanical invention that addresses issues related to ink refill and pressure issues. Hirosawa discusses increasing the number of ink ejection openings in an ink jet print head and accordingly adjusting ink refill so as to provide fast-response capability and ejection performance. Hirosawa shows an embodiment

including six ejection openings along a single orifice plate, each opening corresponding to one of six color inks.

On the other hand, Lavery is more of a traditional ink case that is related to specific ink chemistries. Lavery describes an ink-jet printing process that includes applying an image on a substrate by overprinting, underprinting, or simultaneously printing a binder and a polymeric biguanide of a specific chemical formula. Lavery does not teach or suggest ink jetting the ink and binder from a single orifice plate.

In fact, when teachings of both Hirose and Lavery are combined, as the Examiner proposes, they inherently produce the problem presented by the Applicant which the present invention is directed towards solving, that problem being cross-contamination of the fluids on the print head and clogging of the print head. Naturally, when multiple inks are printed from the same orifice plate, under ink jet conditions, the inks would tend to mix to a certain degree on the orifice plate. Such is the case inherent with Hirose. However, Hirose seems to exemplify the use of multiple liquids of the same type, i.e. multiple color inks. The Examiner has noted that Hirose teaches that the definition of "ink" includes liquid that is applied to the printing medium to "process the ink (for example, solidify or insolubilize a coloring material in the ink applied to the printing medium)". See col 10, ln 10-17. While this is understood, Hirose does not explicitly teach or exemplify using inks of different types, i.e. that would react with each other, on the same orifice plate.

In order to reduce mixing, reduce cross-contamination, and reduce clogging of two reactive inks or a reactive ink and a fixer, the present application proposes selection of a first reactive ink and a second reactive ink or a fixer such that the reaction forms a solid precipitate, and further such that the solid precipitate is redispersible or redissolvable in at least one of the first reactive ink, the second reactive ink or the fixer. As discussed previously, selecting the combination of a first reactive ink and a second reactive ink or a fixer is done on a case-by-case basis. By selecting components and formulating inks/fixers that form good precipitates when printed on a media substrate (due to vehicle components being drawn away by the media or being dried after printing, etc.), but which also can be resolubilized when contacted with one of the reactive ink(s) or a fixer composition, the problems resulting from cross-contamination are greatly minimized. As clear from the Examples, not all combinations of reactants that form acceptable precipitates on a

media substrate are included in the claimed invention. Claim 1 makes it clear that “the solid precipitate is redispersible or redissolvable in at least one of the fixer or the first reactive ink, or the second reactive ink.” More specifically, in looking at the Examples provided by the Applicant, in Example 1, it is noted that Fixer 1 works well with the disclosed ink vehicle containing Acid Blue 9 dye. However, as noted in Example 2, the same ink vehicle with Direct Blue 199 when combined with Fixer 1 did not redissolve. In other words, whether or not a solid precipitate is “redispersible or redissolvable” is determined on a case by case basis.

Furthermore, where Lavery is concerned with a final image exhibiting water-fastness, humidity-fastness and a resistance to smudging, it would be counter-intuitive to the state of the art of the time of Lavery to utilize inks and fixers which would form a solid precipitate that is redispersible or redissolvable by one of the inks or fixers. One of ordinary skill in the art at the time of Lavery would naturally believe that such behavior would inherently cause decreased water-fastness, humidity-fastness, and would increase the propensity of the image to smudge.

Therefore, Hirosawa and Lavery, either individually or in combination do not teach the presently claimed combination of a first reactive ink and a second reactive ink or a fixer which react to form a solid precipitate, where the solid precipitate is redispersible or redissolvable in at least one of the first reactive ink, the second reactive ink, or the fixer. Furthermore, neither reference teaches a single orifice plate which prints two separate and reactive liquids, as is presently claimed. Rather, Hirosawa teaches a means of printing similar liquids from a single orifice plate with improved ink refill (and inherent cross-contamination). And Lavery teaches applying an image on a substrate by overprinting, underprinting, or simultaneously printing a binder and a polymeric biguanide of a specific chemical formula.

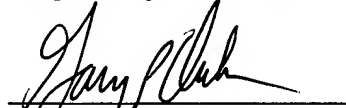
There is no teaching in either reference alone, or in combination, that careful selection of components and matching of reactants and inks/fixers in formulation of ink sets can result in reducing clogging because of the ability of the ink and/or fixer to redissolve or redisperse a formed precipitate upon contact with additional ink/fixer along with some mechanical agitation or temperature change that occurs when firing an ink-jet print head. As neither reference teaches this claim element as part of the state of the art, this rejection is respectfully asserted to be inapplicable to the presently pending claims. Reconsideration is respectfully requested.

In view of the foregoing, Applicants believe that claims 1-32 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone W. Bradley Haymond (Registration No. 35,186) at (541) 715-0159 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 30th day of November, 2006.

Respectfully submitted,



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